



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,526	09/23/2003	Bjoern Heismann	32860-000613/US	1448
30596	7590	10/24/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			GAGLIARDI, ALBERT J	
P.O.BOX 8910			ART UNIT	
RESTON, VA 20195			PAPER NUMBER	
			2884	

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,526

Applicant(s)

HEISMANN ET AL.

Examiner

Albert J. Gagliardi

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Comment on Submissions

1. This action is responsive to submissions of 23 September 2003.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 10, 12 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kyyhkynen (US 6,403,964 B1) in view of Yamazaki *et al.* (US 6,747,290).

Regarding claim 1, *Kyyhkynen* discloses (Figs. 1-3) an image detector (15) for an x-ray device, comprising: a plurality of photosensors (18), each including at least two electric contacts (50, 54) on which an electrical signal occurs upon an x-ray being detected, wherein at least one contact (54) of the photosensors is arranged on its rear side, facing away from an image source (col. 6, lines 33-35).

Regarding the material being a an organic material, it is noted that while *Kyyhkynen* does not identify the material as an organic photodiode material, the use of a variety of photosensor materials including both inorganic and organic materials are known in the art. *Yamazaki* teaches that in comparison to inorganic compounds, organic photodiode have the advantage that they can be manufactured with a large area, have abundant elasticity, and superior processing properties (col. 32, lines 14-19). Therefore it would have been obvious to modify the detector disclosed by *Kyyhkynen* to utilize an organic material in order to allow for a sensor with the advantages as noted by *Yamazaki*.

Regarding claim 2, *Kyyhkynen* discloses that the photosensors form an array in a spatially distributed arrangement (see generally Fig. 1).

Regarding claim 10, *Kyyhkynen* discloses the sensors arranged on a substrate (42).

Regarding claim 12, the use of a substrate with low transparency to x-rays would have been an obvious design choice in order to protect sensitive components (see explanation regarding claims 4-5 below).

Regarding claims 17-18, the detector as recited according to claims 17-18 is suggested by the detector suggested by *Kyyhkynen* and *Yamazaki* as applied to claims 1-2 above, and is rejected accordingly.

5. Claims 3-9, 11, 13-16 and 19-20 rejected under 35 U.S.C. 103(a) as being unpatentable over *Kyyhkynen* and *Yamazaki* as applied above, and further in view of Chappo *et al.* (US 6,510,1950).

Regarding claim 3, *Kyyhkynen* discloses (Fig. 6) that the photosensors are arranged on a substrate (42), wherein the contacts (54) on the rear side of the photosensors are each connected

Art Unit: 2884

to the substrate. Regarding the use of plated through holes in the substrate, although not specifically disclosed, the use of plated through holes is known in the art (see for example *Chappo* at Fig. 6, item 70). *Chappo* teaches that such an arrangement allows for the substrate and readout electronics to be contained in the same footprint thereby allowing the detector to be tailored to any size and shape (abstract).

Regarding claims 4-5, although *Kyyhkynen* does not specifically discuss the relative radiation transparency of the substrate, *Kyyhkynen* discloses that sensitive signals in the circuit board may be shielded (col. 10, lines 20-21). As such, it would have been obvious to form the substrate so as to include a material with relatively low transparency to x-rays so as to effect such shielding and thereby protect sensitive components. Absent some degree of criticality, the formation of shielding as a layer formed on the substrate would have been a matter of routine design choice within the skill of a person of ordinary skill in the art depending on the needs of the application.

Regarding claim 6, in the arrangement as suggested in view of *Chappo* (Figs. 4, 6), electric components (60) and conductor tracks (metal tracings) are arranged on the rear side of the substrate (58) and connected to the plated through holes, and wherein the photosensors are driven by the electric components (60) and electric signals of the electric components are tapped off (col. 7, lines 18-48).

Regarding claim 7, the electrical components include active components such as conversion circuits (col. 7, lines 17-48).

Regarding claim 8, *Kyyhkynen* discloses a common electrically conductive layer (50) facing the image source which makes contact jointly with all the front side contacts of the

Art Unit: 2884

photosensors (19). Although not specifically disclosed by *Kyyhkynen*, the use of a fluorescent layer on the front side of the photosensor layer is well known (see *Chappo* at fig. 6, ref. 50). Those skilled in the art appreciate that such layer allows for the x-rays to be converted to longer wavelength optical radiation which may be more efficiently detected by the photosensors, particularly organic sensors (suggestion of *Yamazaki*) which are typically not as sensitive to shorter wavelength x-rays.

Regarding claim 9, *Chappo* (see claim 3 above) suggests the substrate including a plated-through hole.

Regarding claim 11, *Chappo* (see claim 3 above) suggests the substrate including a plated-through hole.

Regarding claim 13, forming a layer with relatively low transparency on the substrate would have been an obvious design choice (see explanation regarding claims 4-5 above).

Regarding claims 14, 15, and 16, *Chappo* (see explanation regarding claim 6 above) suggests the electric components (60) and conductor tracks (metal tracings) arranged on the rear side of the substrate (58) and connected to the plated-through holes, and wherein the photosensors are driven by the electric components (60) and electric signals of the electric components are tapped off (col. 7, lines 18-48).

Regarding claims 19-20, the detector as recited according to claims 19-20 is suggested by the detector suggested by *Kyyhkynen*, *Yamazaki* and *Chappo* as applied to claims 3-4 above, and is rejected accordingly.

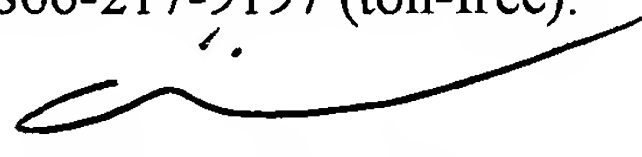
Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert J. Gagliardi whose telephone number is (571) 272-2436. The examiner can normally be reached on Monday thru Friday from 10 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Albert J. Gagliardi
Primary Examiner
Art Unit 2884

AJG